

Louisiana's 2022 Integrated Report and  
Section 303(d) List  
Methods and Rationale

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## **Introduction**

### **Statutes and Regulations**

The Louisiana Department of Environmental Quality (LDEQ) prepared reports to meet the requirements outlined in §303(d) and §305(b) of the federal Water Pollution Control Act (United States Code, Title 33, §1251 et seq., 1972) (commonly known as the Clean Water Act (CWA)) and supporting federal regulations found in Title 40 of the Code of Federal Regulations (CFR), Parts 130.7 and 130.10 (40 CFR 130.7, 130.10). Section 303(d) of the CWA and supporting regulations require each state to identify water quality-limited segments (i.e., Louisiana subsegments that do not meet water quality standards) requiring development of Total Maximum Daily Loads (TMDLs) and to prioritize the water quality-limited segments for TMDL development. States are required to assemble and evaluate existing and readily available water quality-related data and information to develop the list. Additionally, each state must provide documentation to support listing decisions, including: a description of the method used to develop the list; a description of the data and information used to identify (i.e., list) waters; a rationale for any decision not to use existing and readily available data and information; and other information to demonstrate “good cause” for not including waters on the §303(d) list pursuant to 40 CFR 130.7(b)(6).

Section 305(b) of the CWA and supporting regulations require states to report on the quality of state waters every two years; the biennial reports are due April 1 of even-numbered years. Section 305(b) requires a description of all navigable waters in each state and the extent to which these waters provide for the protection and propagation of fish and wildlife and allow for recreational activities in and on the water. Louisiana submits the §303(d) list and the §305(b) report as one document, commonly referred to as the Integrated Report or simply the IR.

### **Guidance**

The United States Environmental Protection Agency (USEPA) issues guidance for the assessment, listing, and reporting of states’ water quality to meet the requirements of CWA §303(d) (list of impaired waters requiring TMDL) and §305(b) (water quality inventory) (USEPA various dates). USEPA guidance outlines the compilation and reporting of state water quality in a combined report—the Integrated Report (IR). USEPA’s guidance further outlines the use of categories to classify the quality of watersheds in each state. Integrated Report categories are outlined in [Table 1](#).

## **Integrated Report Development**

The 2022 IR contains new assessments for subsegments in all 12 Louisiana basins: Atchafalaya (01), Barataria (02), Calcasieu (03), Pontchartrain (04), Mermentau (05), Vermilion/Teche (06), Mississippi (07), Ouachita (08), Pearl (09), Red (10), Sabine (11), and Terrebonne (12). Due to the four-year cyclical nature of LDEQ’s Ambient Water Quality Monitoring Network (AWQMN), typically approximately half of the assessments for the 2022 IR will be new, while the remaining half will be carried forward from the previous IR. Beginning with the 2022 IR the data collection period of record ended in September of even-numbered years. This allowed for sufficient time for LDEQ data verification and entry into the Louisiana Environmental Assessment Utility (LEAU) database prior to use of the data for the 2022 and subsequent IRs. This period of record was

implemented to avoid deferral of IR submittal due to delays in receipt, validation, and processing of data. Data from October 1, 2016 through September 30, 2020 were used for the 2022 IR.

**Table 1.**

**U.S. Environmental Protection Agency Integrated Report Methodology guidance categories used to categorize water body/impairment combinations for the *Louisiana 2022 Integrated Report*; includes IRC 5RC and IRC 5-Alt developed by LDEQ and approved by U.S. Environmental Protection Agency.**

<b>IR Category (IRC)</b>	<b>IR Category Description</b>
IRC 1	<i>Specific Water body Impairment Combination (WIC)</i> cited on a previous §303(d) list is now attaining all uses and standards. Also used for water bodies fully supporting all designated uses.
IRC 2	Water body is meeting some uses and standards but there is insufficient data and/or information to determine if uses and standards <i>associated with the specific WIC</i> cited are being attained.
IRC 3	There is insufficient data and/or information to determine if uses and standards <i>associated with the specific WIC</i> cited are being attained.
IRC 4a	WIC exists and a TMDL was completed for the <i>specific WIC</i> cited.
IRC 4b	WIC exists and control measures other than a TMDL are expected to result in attainment of designated uses <i>associated with the specific WIC</i> cited.
IRC 4c	WIC exists and a pollutant (anthropogenic source) does not cause the <i>specific WIC</i> cited.
IRC 5	WIC exists for one or more uses and a TMDL is required for the <i>specific WIC</i> cited. <b>IRC 5 and its subcategories represent Louisiana's §303(d) list.</b>
IRC 5RC (Revise Criteria)	WIC exists for one or more uses and a TMDL is required for the <i>specific WIC</i> cited; however, LDEQ will investigate revising criteria due to the possibility that natural conditions may be the source of the water quality criteria impairments.
IRC 5- Alt (5-Alternative)	WIC exists for one or more uses and a TMDL is required for the <i>specific WIC</i> cited; however, LDEQ will implement alternative strategies under its 303(d)/Vision process to ensure the water body will meet water quality standards in the future.

## Water Quality Assessment Methods

The following outlines the methods LDEQ used to develop the CWA §303(d) list and water body categorizations found in the 2022 IR. LDEQ used assessment procedures developed and updated over a number of years. Procedures followed USEPA guidance documents for §305(b) reports and §303(d) lists and USEPA's Consolidated Assessment and Listing Methodology (CALM) guidance (USEPA various dates). LDEQ based water quality assessments and §303(d) listings on specific water body subsegments as defined in Louisiana's Surface Water Quality Standards (Louisiana Administrative Code (LAC) 33:IX.1101-1123). Louisiana surface water quality standards define seven designated uses for surface waters: primary contact recreation (PCR), secondary contact

recreation (SCR), fish and wildlife propagation (FWP) (with subcategory of limited aquatic and wildlife use (LAL)), drinking water supply (DWS), oyster propagation (OYS), agriculture (AGR), and outstanding natural resource waters (ONR). Designated uses have specific suites of ambient water quality parameters used to assess their support. Links between designated uses and water quality parameters, as well as water quality assessment procedures, can be found in [Table 2](#). Additional details of Louisiana's IR assessment process can be found in Louisiana's Standard Operating Procedures for Water Quality Assessments and Production of Water Quality Integrated Report (LDEQ 2021a).

## **Water Quality Data and Information**

LDEQ prepared assessments using existing and readily available water quality data and information in order to comply with rules and regulations under §303(d) of the CWA (33 U.S. Code §1313 and 40 CFR 130.7). LDEQ primarily relied on data and information supplied through LDEQ's routine ambient monitoring program to conduct water quality assessments for the 2022 IR. LDEQ conducts monitoring on nearly all water quality subsegments on a four-year statewide monitoring cycle. Approximately one-quarter of the state's subsegments are monitored each year; a limited number of subsegments are monitored (and continue to be monitored) every year (i.e., long-term monitoring sites). Each monitoring cycle or "water-year" begins in October and ends in September of the following year. LDEQ collected monthly and quarterly (organics) water quality data (LDEQ 2019; 2021b; 2021c). Ambient water quality data are available on LDEQ's website at: <http://deq.louisiana.gov/page/ambient-water-quality-monitoring-data>.

LDEQ compiled and assessed data from the AWQMN collected between October 1, 2016 and September 30, 2020. Typically, between one year (conventional sites, 12 samples) and up to four years (long-term trend sites, 48 samples) of data were available (LDEQ 2019; 2021b; 2021c). Except where noted in [Table 2](#), the minimum sample size for IR assessments for all AWQMN parameters is five. Where more than one site within a subsegment was sampled the data was combined as appropriate for assessment of the subsegment.

**Table 2.**

**Decision process for evaluating use support, showing measured parameters for each designated use; Louisiana's 2022 *Integrated Report*.<sup>1</sup>**

Designated Use	Measured Parameter	Support Classification for Measured Parameter		
		Fully Supporting	Partially Supporting <sup>2</sup>	Not Supporting
Primary Contact Recreation (PCR) (Designated swimming months of May-October, only)	Fecal coliform <sup>3</sup>	0-25% do not meet criteria	-	>25% do not meet criteria
	Enterococci <sup>4,5</sup>	0-10% of individual samples do not meet single sample criteria and/or rolling three-month geometric mean $\leq 35$ cfu/100 mL	-	>10% of individual samples do not meet single sample criteria and/or rolling three-month geometric mean $> 35$ cfu/100 mL
	Temperature	0-30% do not meet criteria	>30-75% do not meet criteria	>75% do not meet criteria
	Metals <sup>6,7,8</sup> and Toxics	<2 exceedances of chronic or acute criteria in most recent consecutive 3-year period, or 1-year period for newly tested waters	-	$\geq 2$ exceedances of chronic or acute criteria in most recent consecutive 3-year period, or 1-year period for newly tested waters

**Table 2.**

**Decision process for evaluating use support, showing measured parameters for each designated use; Louisiana's 2022 *Integrated Report*.<sup>1</sup>**

Designated Use	Measured Parameter	Support Classification for Measured Parameter		
		Fully Supporting	Partially Supporting <sup>2</sup>	Not Supporting
Secondary Contact Recreation (SCR) (All months)	Fecal coliform <sup>3</sup>	0-25% do not meet criteria	-	>25 % do not meet criteria
	Metals <sup>6,7,8</sup> and Toxics	<2 exceedances of chronic or acute criteria in most recent consecutive 3-year period, or 1-year period for newly tested waters	-	≥2 exceedances of chronic or acute criteria in most recent consecutive 3-year period, or 1-year period for newly tested waters
Fish and Wildlife Propagation (FWP)	Dissolved oxygen (routine ambient monitoring data) <sup>9</sup>	0-10% do not meet criteria	>10-25% do not meet criteria	>25% do not meet criteria
	Dissolved oxygen (follow-up continuous monitoring data, if needed) <sup>9</sup>	0-10% do not meet criteria	>10-25% do not meet criteria	>25% do not meet criteria
	Temperature, pH, chloride, sulfate, TDS, turbidity	0-30% do not meet criteria	>30-75% do not meet criteria	>75% do not meet criteria
	Ammonia <sup>7,10</sup> Metals <sup>6,7,8</sup> and Toxics	<2 exceedances of chronic or acute criteria in most recent consecutive 3-year period, or 1-year period for newly tested waters	-	≥2 exceedances of chronic or acute criteria in most recent consecutive 3-year period, or 1-year period for newly tested waters



**Table 2.**

**Decision process for evaluating use support, showing measured parameters for each designated use; Louisiana's 2022 Integrated Report.<sup>1</sup>**

Designated Use	Measured Parameter	Support Classification for Measured Parameter		
		Fully Supporting	Partially Supporting <sup>2</sup>	Not Supporting
Drinking Water Source (DWS)	Color	0-30% do not meet criteria	>30-75% do not meet criteria	>75% do not meet criteria
	Fecal coliform <sup>3</sup>	0-30% do not meet criteria	-	>30 % do not meet criteria
	Metals <sup>6,7,8</sup> and Toxics	<2 exceedances of drinking water criteria in most recent consecutive three-year period, or one-year period for newly tested waters	-	≥2 exceedances of drinking water criteria in the most recent consecutive three-year period, or one-year period for newly tested waters
Outstanding Natural Resource Waters (ONR)	Turbidity	0-10% do not meet criteria	>10-25% do not meet criteria	>25% do not meet criteria
Agriculture (AGR)	None	-	-	-
Oyster Propagation (OYS)	Fecal coliform <sup>3</sup>	Median fecal coliform ≤ 14 MPN/100 mL; and ≤ 10% of samples > 43 MPN/100 mL	-	Median fecal coliform > 14 MPN/100 mL; and > 10% of samples > 43 MPN/100 mL
Limited Aquatic and Wildlife (LAL)	Dissolved oxygen <sup>9</sup>	0-10% do not meet criteria	>10-25% do not meet criteria	>25% do not meet criteria

**Table 2.**

**Decision process for evaluating use support, showing measured parameters for each designated use; Louisiana's 2022 *Integrated Report*.<sup>1</sup>**

Designated Use	Measured Parameter	Support Classification for Measured Parameter		
		Fully Supporting	Partially Supporting <sup>2</sup>	Not Supporting

1. Where deviations from the decision process described in Table 2 occur, detailed information will be given to account for and justify those deviations. For instance, circumstances that may not be accounted for in the plain electronic analysis of the data will be explored and may be used to either not list the water body or to put the Water body Impairment Combination (WIC) into a different category. Those circumstances will be fully articulated.
2. While the assessment category of "Partially Supporting" is included in the statistical programming, any use support failures will be recorded in ATTAINS (Assessment, Total Maximum Daily Load, Tracking and Implementation System) as "Not Supporting." This procedure was first adopted for the 2002 §305(b) cycle because "partially supported" uses receive the same TMDL treatment as "not supported" uses.
3. For most water bodies, fecal coliform criteria are as follows: PCR, 400 colonies/100 mL; SCR, 2,000 colonies/100 mL; DWS, 2,000 colonies/100 mL; OYS, 43 colonies/100 mL (LAC 33:IX.1123).
4. LDH beach monitoring enterococci data only applies to the LDH monitored beaches. Refer to page 21 for details.
5. Enterococci criteria for water bodies other than designated LDH beaches apply only to selected subsegments and only during the swimming season of May-October (LAC 33:IX.1113.C.5.a.i.; LAC 33:IX.1123, Table 3).
6. Determination of the application of marine or freshwater metals criteria is made based on LAC 33:IX.1113.C.6.d.
7. Parameters collected quarterly (metals and organics) and ammonia require a minimum of three samples.
8. Ultra-clean metals sampling was discontinued in March 2015 due to lack of funding. It may be resumed in the future, if additional funding and personnel become available. Assessment methods for metals results remain in Table 2 in the event metals sampling is resumed in the future (LDEQ 2015).
9. In the event that analysis of routine ambient monitoring data for dissolved oxygen results in partial- or non-support, continuous monitoring (CM) data, where available, was used for follow-up assessment. CM data runs were approximately 48-72 hours in duration. CM data was evaluated as follows: All of the 15-minute interval dissolved oxygen observations from a CM sample run were analyzed to determine if more than 10% of the data points were below minimum criteria. Water bodies that fell below the criteria greater than 10% of the time were reported as IRC 5 and are therefore on the §303(d) list. Water bodies that fell below the criteria less than or equal to 10% of the time were placed in IRC 1, fully supported. If ambient monitoring indicated impairment and CM data was not available for analysis, the water body was placed in IRC 5 until CM data can be collected during the critical season of May 1 through October 31. In some cases, CM data was not collected because it was determined by LDEQ headquarters and regional staff that CM data collection efforts were not warranted due to conditions in the field.
10. Alternative use support decision rules may be evaluated when data for more than one water cycle year is available for performing assessments. In addition, the date of an exceedance will be evaluated when more than 2 exceedances occur at a site to determine use support.

### **Subsegments with Downstream or Upstream Monitoring Sites**

LDEQ used ambient monitoring data and information collected from within or immediately downstream or upstream of a water body subsegment to evaluate each of the subsegment's designated uses, using the assesment decision processes shown in [Table 2](#). Ten subsegments used for the 2022 IR had sites less than 1.0 mile downstream or upstream of the subsegment boundary (i.e., LA030101\_00, LA030304\_00, LA030506\_00, LA041802\_00, LA070203\_00, LA080101\_00, LA081603\_00, LA090203\_00, LA100502\_00, and LA100706\_00); in each case there were no known inputs between the subsegment boundary and the sample site. Seven

subsegments had sample points between 1.0 and 4.0 miles upstream or downstream from the subsegment boundary (i.e., LA010101\_00, LA030301\_00, LA030501\_00, LA040905\_00, LA042209\_00, LA050802\_00, and LA080912\_00). One subsegment (LA110701\_00) had a site located in coastal waters with open water between the subsegment boundary and the sample site. One subsegment (LA030503\_00) had a sample point 5.4 miles downstream. In each case, there were no reasonable alternatives for sampling within the subsegment boundary and each site was determined to be representative of the assessed subsegment.

### **Subsegments with Long-Term Monitoring Sites**

LDEQ collected data at 21 sites in subsegments with long-term monitoring stations. LDEQ applied assessments for a monitoring station indicating use impairment to the entire subsegment. Where more than one site within a subsegment was sampled the data was combined as appropriate for assessment of the subsegment.

### **Metals**

Ultra-clean metals sampling was discontinued in March 2015 due to lack of funding. It may be resumed in the future, if additional funding and personnel become available. Assessment methods for metals results remain in [Table 2](#) in the event metals sampling is resumed in the future (LDEQ 2015).

### **Dissolved Oxygen**

Beginning in 2008, when appropriate, LDEQ collected two sets of data to conduct dissolved oxygen (DO) assessments. If routine ambient monitoring DO data indicated potential impairment of the use, LDEQ may have collected and used continuous monitoring DO datasets to make a final determination on use support. Continuous monitoring data allows evaluation of the 24-hour diurnal DO fluctuations and an improved determination of whether the frequency of DO exceedances is impairing the use (LDEQ 2008). Deployment of continuous monitors was also dependent on available resources and a determination of whether collecting the extra dataset was appropriate (e.g., if stream impairment was already known, there was no benefit to be gained by deploying a continuous monitor until additional pollution control measures were implemented). In some cases it was determined that conditions in the water body were severely impacted by drought, flooding, or other natural or anthropogenic conditions. If such conditions were considered severe enough, it was determined the subsegment would be unable to attain DO criteria even with the use of continuous monitoring. In these cases continuous monitors were not deployed in order to reduce costs and eliminate risk to equipment.

For water quality data used in the 2022 IR a total of 27 dissolved oxygen continuous monitoring (DOCM) runs were conducted following DO grab samples from the ambient water quality monitoring program. These covered 23 different subsegments. Analysis of the DOCM data resulted in the following: no subsegments changed from the initial DO assessment; six subsegments remained fully supporting the DO criterion; and 17 subsegments remained impaired for low DO.

### **Coastal Subsegments with Shared Monitoring Sites**

Beginning in 2010, LDEQ evaluated coastal subsegments for the potential to have shared data points for contiguous and similar subsegments. This was done to address subsidence and other land-altering activities that created open water areas between subsegments that were previously separated by land. Paired and/or adjacent subsegments were sampled on an alternating basis (one

subsegment sampled one month, the paired subsegment sampled the next month). For the 2016 IR, all historical data for each site/subsegment for DO, turbidity, pH, temperature, salinity, alkalinity, and hardness and all fecal data from 2004 to present was analyzed to determine which sites/subsegments were not significantly different and, therefore, could be combined for assessment purposes. For the 2018 IR, additional statistical analyses were conducted to verify if combining data from the paired subsegments remained a valid option. The additional 2018 IR analyses used seasonal blocking and employed power and effect analysis for parametric and robust statistical procedures. For the 2020 IR, 1,412 new data points were added to the dataset. These data were re-examined to account for recent changes in coastal conditions that affected original sample site choices for these subsegments. Two sample permutation test and one way ANOVA permutation method were used for the comparisons and correction values were employed to improve statistical test performance and to address statistical assumption requirements that may not have been met for all site comparisons. Sites were considered different if at least one parameter was significantly different. Subsegment/sites considered different were not combined for assessment.

The following sites were analyzed as paired subsegments in the 2020 IR with data from the 2018/2019 or 2019/2020 ambient monitoring cycles: LA010901\_00; LA041701\_00; LA041704\_00; LA061001\_00; LA061002\_00; LA061104\_00; LA110303\_00; LA110304\_00; LA120802\_00; LA120803\_00; and LA120804\_00. Because the subsegments had sufficient monthly data for a twelve month period during the same ambient monitoring cycles, assessments for the 2022 IR was performed separately for each subsegment. [Table 3](#) shows the results of 2022 IR analyses. Where sites were statistically similar, data from both sites were combined and conventional assessment protocols found in [Table 2](#) were used for assessment. When sites were not determined to be statistically similar data was assessed individually for each subsegment and parameter. Assessment results are found in [Table 4](#). Additional information on the statistical approaches used to determine the suitability of combining sites is available upon request.

**Table 3.**

**List of paired coastal subsegments/sites used for shared water quality monitoring and assessment. Parameters in parenthesis were significantly different; therefore, data was not combined and subsegment/sites were assessed individually.**

<b>Subsegment</b>	<b>Site</b>	<b>Permutation Results</b>
LA042102_00 LA042104_00	1080 0007	Should not be combined. (Hardness, pH, salinity)
LA042201_00 LA042202_00	1090 1082	Should not be combined. (Hardness, salinity)
LA042203_00 LA042204_00	1089 1091	Should not be combined. (Hardness, pH, salinity)
LA042207_00 LA042208_00	1083 0006	Not significantly different
LA042205_00 LA042206_00	1088 1087	Not significantly different
LA060803_00 LA060804_00	0678 0679	Not significantly different
LA120406_00 LA120708_00	0937 0955	Not significantly different

Table 4.

Combined assessments for coastal subsegments with shared ambient monitoring sites. Percentages indicate percent of samples failing to meet the criterion. (FS = Fully Supported; NS = Not Supported; AI = Assessed Independently; N/A = Not Applicable)

Assessment Subsegment	Enterococci PCR <sup>1</sup>	Fecal coliform PCR <sup>2</sup>	Temperature PCR	Fecal coliform SCR	Fecal coliform OYS	DO FWP	pH FWP	Turbidity FWP	Temperature FWP
LA042102_00	No Data	0% FS	0% FS	0% FS	50% NS	0% FS	0% FS	0% FS	0% FS
LA042104_00	N/A	0% FS	0% FS	0% FS	33.3% NS	0% FS	0% FS	N/A <sup>3</sup>	0% FS
	<b>AI</b>	<b>AI</b>	<b>AI</b>	<b>AI</b>	<b>AI</b>	<b>AI</b>	<b>AI</b>	<b>AI</b>	<b>AI</b>
LA042201_00	NS	N/A	0% FS	0% FS	0% FS	16.6% NS	0% FS	N/A <sup>3</sup>	0% FS
LA042202_00	NS	N/A	0% FS	0% FS	0% FS	0% FS	0% FS	N/A <sup>3</sup>	0% FS
	<b>AI</b>	<b>N/A</b>	<b>AI</b>	<b>AI</b>	<b>AI</b>	<b>AI</b>	<b>AI</b>	<b>N/A</b>	<b>AI</b>
LA042203_00	NS	N/A	0% FS	0% FS	0% FS	0% FS	0% FS	N/A <sup>3</sup>	0% FS
LA042204_00	NS	N/A	0% FS	0% FS	0% FS	16.7% NS	0% FS	N/A <sup>3</sup>	0% FS
	<b>AI</b>	<b>N/A</b>	<b>AI</b>	<b>AI</b>	<b>AI</b>	<b>AI</b>	<b>AI</b>	<b>N/A</b>	<b>AI</b>
LA042205_00	NS	N/A	0% FS	0% FS	0% FS	0% FS	0% FS	N/A <sup>3</sup>	0% FS
LA042206_00	NS	N/A	0% FS	0% FS	0% FS	0% FS	0% FS	N/A <sup>3</sup>	0% FS
<b>Combined</b>	<b>NS</b>	<b>N/A</b>	<b>0% FS</b>	<b>0% FS</b>	<b>0% FS</b>	<b>0% FS</b>	<b>0% FS</b>	<b>N/A</b>	<b>0% FS</b>
LA042207_00	NS	N/A	0% FS	0% FS	16.7% NS	0% FS	0% FS	N/A <sup>3</sup>	0% FS
LA042208_00	NS	N/A	0% FS	0% FS	16.7% NS	0% FS	0% FS	N/A <sup>3</sup>	0% FS
<b>Combined</b>	<b>NS</b>	<b>N/A</b>	<b>0% FS</b>	<b>0% FS</b>	<b>16.7% NS</b>	<b>0% FS</b>	<b>0% FS</b>	<b>N/A</b>	<b>0% FS</b>
LA060803_00	NS	N/A	0% FS	0% FS	N/A <sup>4</sup>	0% FS	0% FS	33.3% NS	0% FS
LA060804_00	NS	N/A	0% FS	0% FS	N/A <sup>4</sup>	33% NS	0% FS	66.7% NS	0% FS
<b>Combined</b>	<b>NS</b>	<b>N/A</b>	<b>0% FS</b>	<b>0% FS</b>	<b>N/A</b>	<b>16.7% NS</b>	<b>0% FS</b>	<b>50% NS</b>	<b>0% FS</b>
LA120406_00	NS	N/A	0% FS	0% FS	0% FS	0% FS	0% FS	N/A <sup>3</sup>	0% FS
LA120708_00	NS	N/A	0% FS	0% FS	60% NS	0% FS	0% FS	N/A <sup>3</sup>	0% FS
<b>Combined</b>	<b>NS</b>	<b>N/A</b>	<b>0% FS</b>	<b>0% FS</b>	<b>25% NS</b>	<b>0% FS</b>	<b>0% FS</b>	<b>N/A</b>	<b>0% FS</b>

<sup>1</sup> Enterococci criteria apply only to selected subsegments during swimming season of May-October (LAC 33:IX.1123, Table3)

<sup>2</sup> Fecal coliform data available but criteria do not apply during swimming season of May-October. Enterococci criteria apply during the swimming season. (LAC 33:IX.1113.C.5.a)

<sup>3</sup> No turbidity criterion for these subsegments

<sup>4</sup> No oyster propagation use for this subsegment (LAC 33:IX.1123, Table 3).

### **Assessment of Wetlands Approved for Wastewater Assimilation Projects**

LDEQ compiled and assessed data from the Annual Wetland Monitoring Reports received from 2016 to 2020. Data are prepared by the permitted dischargers approved for wastewater assimilation projects as a requirement of the Louisiana Pollutant Discharge Elimination System (LPDES) Permit Program.

The annual wetland monitoring data was compiled for the reporting period of 2016 to 2020, representing the most recent complete five-year period as of the end of 2020. No other data was used for wetland assimilation area assessments. In review of the data, any quality issues identified, such as incorrect units or suspect extreme values, were communicated to the permittee and updated information was resubmitted by the permittee to LDEQ. Original and updated annual wetland monitoring reports submitted by the permittees are contained in LDEQ's EDMS under the appropriate wastewater permittees agency interest number (LDEQ 2021d).

The criteria for assessment of biological integrity for wetlands approved for wastewater assimilation projects (LAC 33:IX.1113.12.b) (LDEQ 2021e) is no more than a 20% reduction in the rate of total above-ground wetland productivity over a five-year period as compared to a reference area. The total above-ground productivity or net primary productivity is the sum of the perennial (stem growth) and ephemeral (litterfall) productivity for forested sites, and is the ephemeral (end-of-season live biomass) productivity for marsh sites. The Near site (which is the site in the discharge area closest to point of effluent addition) and the Reference site (site that is not within the discharge area) for the same wetland type of forested or marsh are used in this assessment.

The following methods were performed for the assessment:

1. Compile the productivity data for the determined five-year period for the Near site and the Reference site for the same wetland type for each assimilation wetland project.
2. Determine the total above-ground wetland productivity (NPP) at the Near site and Reference site for the same wetland type for each assimilation wetland project.
  - a. For a Forest Wetland site, sum the mean perennial productivity (PP) and ephemeral productivity (EP) for each year to determine each annual NPP (Equation 1)  
Equation 1:  $NPP_{Forest} = PP + EP$   
Results for a Forest site will include an NPP Forest value for each year (Yr1, Yr2, Yr3, Yr4, and Yr5) over the five-year period where data is available.
  - b. For a Marsh Wetland site, determine the mean end-of-season live biomass (EOSL) for each year to determine mean annual NPP (Equation 2).  
Equation 2:  $NPP_{Marsh} = EOSL$   
Results for a Marsh site will include an NPP Marsh value for each year (Yr1, Yr2, Yr3, Yr4, and Yr5) over the five-year period where data is available.
3. If multiple Reference sites (combined sites) are available for an assimilation area, then the average percent change for the sites is used for the assessment.
  - a. Calculate the year-to-year percent change for each site.
  - b. Calculate the average of year-to-year percent changes for the combined sites, if available.
4. If a Near site is not available, then the next closest site is used for the comparison to the Reference site.
5. For each year-to-year comparison is there a reduction in growth at the Test Site as indicated by a negative growth percentage?

- a. No (e.g.,  $\geq 0\%$  growth) – **Not impaired for that year-to-year comparison**
- b. Yes (e.g.,  $< 0\%$  growth) – Is there a reduction or increase at the Reference Site?
  - 1. Reference Site Reduction – Is the Test Site reduction less than the Reference Site reduction?
    - a. Yes (e.g., Reference Site -30% and Test Site -10% = Lower rate of reduction at Test Site – **Not impaired for that year-to-year comparison**)
    - b. No – See next step
  - 2. Reference Site Reduction – Is the Test Site reduction more than 20 percentage points less than the Reference Site reduction?
    - a. Yes (e.g., Reference Site -5% and Test Site -30% = 25 percentage points ( $>20\%$ ) reduction below Reference Site) – **Impaired for that year-to-year comparison**; also,
    - b. No (e.g., Reference Site -5% and Test Site -20% = 15 percentage points ( $<20\%$ ) reduction below Reference Site) – **Not impaired for that year-to-year comparison**
  - 3. Reference Site Increase – Is the Test Site reduction more than 20 percentage points less than the Reference Site increase?
    - a. Yes (e.g., Reference Site +5% and Test Site -20% = 25 percentage points ( $>20\%$ ) reduction below Reference Site) – **Impaired for that year-to-year comparison**
    - b. No – (e.g., Reference Site +5% and Test Site -10% = 15 percentage points ( $<20\%$ ) reduction below Reference Site) – **Not impaired for that year-to-year comparison**
- 6. Over the five-year period, how many year-to-year impairments occurred?
  - a. One year-to-year impairment – **Not impaired for the IR assessment**
  - b. Two or more year-to-year impairments – **Impaired for the IR assessment**

[Table 5](#) shows the 2022 Water Quality Integrated Report assessments for wetland assimilation projects and the associated subsegments.



**Table 5.**

**Summary of Mean Percent Change in NPP for a five-year period for wastewater assimilation projects.**

<b>Luling Wetland, St. Charles (LA020305_00)</b>			
<b>Forested Site</b>			
<b>Year</b>	<b>% Change Near Test Site (4626)</b>	<b>% Change Reference Site (4629)</b>	<b>Assessment of Year-to-Year Support</b>
2016 to 2017	-15.4%	-22.1%	Meet - Test percent loss at lower rate than reference site loss
2017 to 2018	39.5%	-1.4%	Meet - Positive growth at test site
2018 to 2019	-40.0%	9.1%	Fail - Test percent loss >20 percentage points below reference site
2019 to 2020	17.2%	-16.2%	Meet - Positive growth at test site
			<b>One annual failure over four year-to-year comparisons - Supports FWP</b>

<b>South Slough Wetland, Hammond (LA040607_00)</b>			
<b>Marsh Site</b>			
<b>Year</b>	<b>% Change Near Test Site (4635)</b>	<b>% Change Reference Site (4638)</b>	<b>Assessment of Year-to-Year Support</b>
2016 to 2017	-8.6%	23.3%	Fail - Test percent loss >20 percentage points below reference site
2017 to 2018	-22.6%	-21.9%	Meet - Test percent loss within 20 percentage points of reference site
2018 to 2019	-21.6%	21.7%	Fail - Test percent loss >20 percentage points below reference site
2019 to 2020	52.9%	-9.3%	Meet - Positive growth at test site
			<b>Two annual failures over four year-to-year comparisons - Impaired for FWP</b>

**Table 5.**

**Summary of Mean Percent Change in NPP for a five-year period for wastewater assimilation projects.**

<b>Chinchuba Swamp Wetland, Mandeville (LA040805_00)</b>			
<b>Year</b>	<b>% Change Near Test Site (4609)</b>	<b>% Change Reference Site (4608)</b>	<b>Assessment of Year-to-Year Support</b>
2016 to 2017	-14.9%	-27.9%	Meet - Test percent loss at lower rate than reference site loss
2017 to 2018	13.7%	2.9%	Meet - Positive growth at test site
2018 to 2019	5.7%	38.3%	Meet - Positive growth at test site
2019 to 2020	-11.7%	-21.2%	Meet - Test percent loss at lower rate than reference site loss
			<b>No annual failures over four year-to-year comparisons - Supports FWP</b>

  

<b>East Tchefuncte Marsh Wetland, Mandeville (LA040806_00)</b>			
<b>Forested Site<sup>1</sup></b>			
<b>Year</b>	<b>% Change Near Test Site (4612)</b>	<b>% Change Reference Site (4608)</b>	<b>Assessment of Year-to-Year Support</b>
2016 to 2017	-19.5%	-27.9%	Meet - Test percent loss at lower rate than reference site loss
2017 to 2018	22.7%	2.9%	Meet - Positive growth at test site
2018 to 2019	-1.3%	38.3%	Fail - Test percent loss >20 percentage points below reference site
2019 to 2020	26.2%	-21.2%	Meet - Positive growth at test site
			<b>One annual failure over four year-to-year comparisons - Supports FWP</b>

**Table 5.**

**Summary of Mean Percent Change in NPP for a five-year period for wastewater assimilation projects.**

<b>Cote Gelee Swamp Wetland, Broussard (LA060807_00)</b>			
<b>Year<sup>2</sup></b>	<b>% Change Near Test Site (4617)</b>	<b>% Change Reference Sites (4615, 4616)</b>	<b>Assessment of Year-to-Year Support</b>
2012 to 2013	-39.6%	-62.7%	Meet - Test percent loss at lower rate than reference site loss
2013 to 2014	81.4%	89.6%	Meet - Positive growth at test site
2014 to 2015	-10.3%	-2.2%	Meet - Test percent loss within 20 percentage points of reference site
2015 to 2016	-10.4%	-0.6%	Meet - Test percent loss within 20 percentage points of reference site
			<b>No annual failures over four year-to-year comparisons - Supports FWP</b>

<b>Breaux Bridge Swamp Wetland, Breaux Bridge (LA060805_00)</b>			
<b>Year</b>	<b>% Change Near Test Site (4588)</b>	<b>% Change Reference Site (4586)</b>	<b>Assessment of Year-to-Year Support</b>
2016 to 2017	0.1%	-11.3%	Meet - Positive growth at test site
2017 to 2018	-19.3%	-33.0%	Meet - Test percent loss at lower rate than reference site loss
2018 to 2019	36.6%	80.0%	Meet - Positive growth at test site
2019 to 2020	-16.8%	-30.6%	Meet - Test percent loss at lower rate than reference site loss
			<b>No annual failures over four year-to-year comparisons - Supports FWP</b>

**Table 5.**

**Summary of Mean Percent Change in NPP for a five-year period for wastewater assimilation projects.**

<b>Cypress Island Coulee Swamp Wetland, St. Martinville (LA060806_00)</b>			
<b>Year</b>	<b>% Change Near Test Sites (4591, 4592, 4595)</b>	<b>% Change Reference Sites (2016-2018, Site 4586; 2018 to 2020, Sites 4586, 4921, 4922)</b>	<b>Assessment of Year-to-Year Support</b>
2016 to 2017	75.8%	-11.3%	Meet - Positive growth at test site
2017 to 2018	-23.8%	-33.0%	Meet - Test percent loss at lower rate than reference site loss
2018 to 2019	16.0%	61.2%	Meet - Positive growth at test site
2019 to 2020	-5.8%	-20.6%	Meet - Test percent loss at lower rate than reference site loss
			<b>No annual failures over four year-to-year comparisons - Supports FWP</b>

**Table 5.**

**Summary of Mean Percent Change in NPP for a five-year period for Near Sites for wastewater assimilation projects.**

<b>Thibodaux Swamp Wetland<sup>3</sup>, Thibodaux (LA120207_00)</b>			
<b>Year</b>	<b>% Change Near Test Site (4645)</b>	<b>% Change Reference Sites (4644, 4751, 4752)</b>	<b>Assessment of Year-to-Year Support</b>
2016 to 2017	43.1%	-9.4%	Meet - Positive growth at test site
2017 to 2018	99.5%	-21.4%	Meet - Positive growth at test site
2018 to 2019	64.3%	10.6%	Meet - Positive growth at test site
2019 to 2020	-41.6%	-5.2%	Fail - Test percent loss >20 percentage points below reference site
			<b>One annual failure over four year-to-year comparisons - Supports FWP</b>

  

<b>Bayou Ramos Swamp Wetland, St. Mary (LA120208_00)</b>			
<b>Year</b>	<b>% Change Near Test Site (4603)</b>	<b>% Change Reference Sites (4604, 4605, 4606)</b>	<b>Assessment of Year-to-Year Support</b>
2016 to 2017	69.3%	42.8%	Meet - Positive growth at test site
2017 to 2018	5.0%	-17.8%	Meet - Positive growth at test site
2018 to 2019	72.2%	473.2%	Meet - Positive growth at test site
2019 to 2020	-36.1%	-45.2%	Meet - Test percent loss at lower rate than reference site loss
			<b>No annual failures over four year-to-year comparisons - Supports FWP</b>

1. A marsh site was also run for this wetland; however, the location was determined to be unsuitable for assessment and was not used. The marsh site will be reevaluated in the future.
2. No new data was available for Cote Gelee Wetland due to COVID traveling restrictions and 2019 data was incomplete due to Hurricane Laura, therefore, 2018 IR data and assessment, which was also used for the 2020 IR, was carried forward for the 2022 IR.
3. Near site is comprised of a small percentage of actual trees (<25%), majority is floating marsh, which is measured by end of season live biomass.

### **Reevaluation of Nonpoint Source Pesticides Study and Assessment**

In March 2020 it was found that detection levels for an LDEQ Nonpoint Source Program pesticides study conducted in 2014/2015 were too high to effectively assess the subsegments in question. As a result, 32 subsegments were once again reported with suspected causes of impairment for one or more of five pesticides (Carbofuran, DDT, Fipronil, Methoxychlor, and Toxaphene). The suspected causes will be found in the 2022 IR assessment spreadsheet when it is released for public comment and EPA review/approval.

### **Additional Data and Information**

LDEQ's routine ambient monitoring data (described above) provided the primary set of data and information used for water quality assessments and listing decisions. However, LDEQ also used additional datasets and information which are described below.

#### **Nonpoint Source Program Monitoring Data**

LDEQ's Nonpoint Source (NPS) Program focuses on restoration efforts to address NPS runoff in those subsegments suspected of impairment by *nonpoint sources* in the IR. In the 2022 IR, water quality sampling at AWQMN sites by the NPS Program provided an additional set of data used for water quality assessments and listing decisions. All NPS monitoring projects were conducted using USEPA and LDEQ approved QAPPs. As a result of the inclusion of NPS monitoring data the following IR assessment changes occurred:

- LA040301\_00 – Low pH impairment was added to FWP use for the subsegment, overall FWP use support remained as not supporting;
- LA060801\_00 – Fecal coliform impairment was added to SCR use for the subsegment, changed SCR use support to not supporting;
- LA060910\_00 – DO is now meeting the criteria for the subsegment, FWP use remained impaired due to other suspected causes of impairment;
- LA070505\_00 – DO is now meeting the criteria for the subsegment, changed FWP use to fully supporting;
- LA080903\_00 – DO is now meeting the criteria for the subsegment, FWP use remained impaired due to other suspected causes of impairment;
- LA081101\_00 - DO impairment was added to FWP use for the subsegment, changed FWP use to not supporting; and
- LA081609\_00 – Fecal coliform is now meeting the PCR criteria for the subsegment, changed PCR use to fully supporting.

#### **Coastal Louisiana Water Quality Study**

In 2018, the Coastal Protection and Restoration Authority (CPRA) established a monitoring transect extending from Barataria Pass, Louisiana to the inner shelf in order to better understand water quality changes from restoration activities. This transect was developed in collaboration with Louisiana State University, LDEQ, and The Water Institute of the Gulf (CPRA 2018). This region is a key intersect for the interactive effects of multiple ecosystem change drivers (e.g., restoration

projects, riverine nutrient loading, hypoxia, oil pollution, climate change) on living resources in the Gulf of Mexico. The datasets extend monitoring from inshore to offshore, increasing the understanding of: 1) baseline conditions for coastal restoration projects; 2) inshore to offshore water quality dynamics; and 3) changes in extent and severity of hypoxia. The initial project came to an end in 2020, however, the USEPA released funds to Hypoxia Task Force member states in order to support nutrient strategies, and the transect study is expected to provide data through 2022 (USEPA 2019, 2020).

Data and samples for this project were collected in the field by LDEQ. Data collection for this study includes DO and related in situ meter parameters at three monitoring stations within two subsegments of Louisiana's state territorial waters of the Gulf of Mexico:

- LA021101\_00 – Barataria Bay; includes Caminada Bay, Hackberry Bay, Bay Batiste, and Bay Long (Estuarine)
- LA021102\_00 – Barataria Basin Coastal Bays and Gulf Waters to the State 3-mile limit

Depth profile monitoring was performed where total depth at each site was first recorded and used to determine the depth of each meter reading at the site. Electronic meter readings and water quality samples were taken at three depths – surface, mid, and bottom. Bottom depth readings were taken within one meter above the bottom to avoid embedding the probe in sediments which could affect the readings. For 2022 IR assessment purposes DO, pH, turbidity, and temperature data were analyzed using the routine criterion assessment procedure outlined in [Table 2](#). Based on the data collected for this project, DO in LA021102\_00 was reported as impaired for FWP in the 2022 IR assessment. The other parameters were fully supported based on the Coastal Louisiana Water Quality Study data ([Table 6](#)).

### **Louisiana Department of Health (LDH) Fish Advisory and Beach Monitoring Data**

LDEQ used LDH fishing and swimming advisory information and enterococci bacteria datasets collected for the state's Beach Monitoring Program. For water bodies with fish consumption or swimming advisories within a subsegment, but not the named subsegment water body, the advisory water body was also named in the 2022 IR. Impairments of this nature are water body-specific issues not directly related to the overall subsegment.

LDEQ evaluated the LDH beach monitoring data based on the federally-promulgated enterococci criteria for Louisiana and used by LDH for determining beach closures. Enterococci data collected as part of LDH's beach monitoring were evaluated using USEPA's assessment rule of 10%. Under this rule, if more than 10% of samples exceed the statistical threshold value of 130 cfu/100 mL over the period of record used for the IR, then an impairment for enterococci is reported. If the enterococci geometric mean was > 35 cfu/100mL over a one month interval, or up to a three month interval, during the period of record used for the IR, then an impairment is reported (LAC 33:IX.1113.C.5.a.i.). Duplicate samples in the dataset were treated as QC samples and were not averaged with the target sample to keep evaluation methods consistent with LDEQ protocol.

### **Third-Party Data**

LDEQ published a request for data and information during a 30-day public notice period which ended July 16, 2021. The St. Tammany Parish Government provided datasets for several inland and/or coastal waters studies. In addition to the previously described data for the 2022 IR, LDEQ located and assessed third-party datasets from sources that are known to collect and/or store water

quality information that are relevant to assessment. This resulted in the analysis of data from four organizations: 1) Pontchartrain Conservancy (PC); 2) U.S. Geological Survey (USGS); 3) National Oceanic and Atmospheric Administration (NOAA) and 4) the Gulf States Marine Fisheries Commission, Southeast Area Monitoring and Assessment Program (SEAMAP). Project plans and data were reviewed to determine if it met LDEQ quality assurance/quality control requirements by being collected and analyzed with approved quality assurance project plans or other recognized data collection and validation methods.

Data from each organization was obtained either through contact with the organization or through available internet resources. All data was limited to samples collected between October 1, 2016 – September 30, 2020. Sites were located using Geographic Information System (GIS) to determine which Louisiana subsegments they represented and were limited to only those sites within Louisiana territorial waters. Where more than one site within a subsegment was sampled by an organization, the data was combined for assessment of the subsegment. To assess a depth profile from a site, samples closest to each 0.5 meter increment were used, regardless of the collection instrument, starting from the first surface sample and proceeding down to the bottom-most depth sample. Samples that fell between these nearest half-meter readings were not included. Varying programs collected varying parameters; data pertinent to LDEQ assessments was used for each program, although there was not consistency of parameters among third-party sources. Assessments were made based on the appropriate LDEQ water quality criteria using conventional rules. See [Table 2](#) for more details on assessment methods for additional parameters available in the datasets.

A summary of the assessments on subsegments for which additional data was available is found in [Table 6](#). A total of thirty-one subsegment assessments included additional datasets. Fifteen of the subsegments with both additional and LDEQ ambient program data had all parameter assessments in agreement. Sixteen subsegments showed disagreement for one or more parameters between the additional and LDEQ ambient program dataset assessments. LDEQ's reconciliation of additional data assessments is provided in the last column of [Table 6](#). Full datasets and more details concerning additional data assessments and LDEQ ambient program assessments are available upon request.



Table 6.

**Third-party parameter-specific data assessments and Louisiana Department of Environmental Quality 2022 *Integrated Report* conventional data assessments (FS = Fully Supported; NS = Not Supported).**

Subsegment Number	Collecting Organization	Parameter	Third-Party Assessment Results	LDEQ Assessment Results	Third-Party Data Reconciliation with LDEQ 2022 IR Assessments
LA010501_00	USGS	DO pH Temperature	NS FS FS	NS FS FS	All assessments agree – <b>No change</b>
LA010901_00	SEAMAP	DO Temperature	NS FS	FS FS	SEAMAP dataset indicating failure to support DO criterion is sufficient to override LDEQ assessment; <b>Report as impaired for DO</b>
LA020902_00	USGS	DO pH Temperature	FS FS FS	FS FS FS	All assessments agree – <b>No change</b>
LA020903_00	USGS	DO pH Temperature	FS FS FS	FS FS FS	All assessments agree – <b>No change</b>
LA020904_00	USGS	DO pH Temperature	FS FS FS	FS FS FS	All assessments agree – <b>No change</b>
LA021001_00	USGS	DO pH Temperature	FS FS FS	FS FS FS	All assessments agree – <b>No change</b>

Table 6.

Third-party parameter-specific data assessments and Louisiana Department of Environmental Quality 2022 *Integrated Report* conventional data assessments (FS = Fully Supported; NS = Not Supported).

Subsegment Number	Collecting Organization	Parameter	Third-Party Assessment Results	LDEQ Assessment Results	Third-Party Data Reconciliation with LDEQ 2022 IR Assessments
LA021101_00	PC	DO	NS	FS	PC dataset indicating failure to support DO criterion is not sufficient to override USGS, CPRA-LDEQ, and LDEQ assessments – <b>No change</b>
		Temperature	FS	FS	
	USGS	DO	FS	FS	
		pH	FS	FS	
		Temperature	FS	FS	
	CPRA-LDEQ	DO	FS	FS	
		pH	FS	FS	
		Temperature	FS	FS	
LA021102_00	NOAA	DO	NS	FS	NOAA and CPRA-LDEQ dataset indicating failure to support DO criterion is sufficient to override SEAMAP and LDEQ assessment; <b>Report as impaired for DO</b>
		pH	FS	FS	
		Temperature	FS	FS	
	SEAMAP	DO	FS	FS	
		Temperature	FS	FS	
	CPRA-LDEQ	DO	NS	FS	
		pH	FS	FS	
LA040803_00	PC	Temperature	FS	FS	PC dataset indicating failure to support DO criterion is sufficient to override LDEQ assessment; <b>Report as impaired for DO</b>
		Turbidity	FS	FS	
		DO	NS	FS	
		Enterococci	NS	NS	
		Fecal coliform	FS	FS	
		pH	FS	FS	

Table 6.

**Third-party parameter-specific data assessments and Louisiana Department of Environmental Quality 2022 Integrated Report conventional data assessments (FS = Fully Supported; NS = Not Supported).**

Subsegment Number	Collecting Organization	Parameter	Third-Party Assessment Results	LDEQ Assessment Results	Third-Party Data Reconciliation with LDEQ 2022 IR Assessments
LA040804_00	PC	DO Fecal coliform pH Temperature Turbidity	FS NS FS FS NS	FS FS FS FS FS	PC dataset indicating failure to support Fecal coliform and Turbidity criterion is sufficient to override LDEQ assessment; <b>Report as impaired for Fecal coliform and Turbidity</b>
LA040904_00	PC	DO Enterococci Fecal coliform pH Temperature Turbidity	FS NS FS FS FS FS	NS NS FS FS FS FS	PC dataset indicating full support of DO criterion is sufficient to override LDEQ assessment of not supported; <b>Report as meeting criteria for DO</b>
LA040915_00	St. Tammany	DO Fecal coliform Temperature	NS NS FS	NS FS FS	St. Tammany dataset indicating failure to support Fecal coliform is sufficient to override LDEQ assessment; <b>Report as impaired for Fecal coliform</b>
LA040916_00	St. Tammany	DO Fecal coliform Temperature	NS FS FS	NS FS FS	All assessments agree – <b>No change</b>
LA041001_00	PC	DO Enterococci Fecal coliform pH Temperature Turbidity	FS NS FS FS FS FS	FS NS FS FS FS FS	All assessments agree – <b>No change</b>

Table 6.

**Third-party parameter-specific data assessments and Louisiana Department of Environmental Quality 2022 *Integrated Report* conventional data assessments (FS = Fully Supported; NS = Not Supported).**

Subsegment Number	Collecting Organization	Parameter	Third-Party Assessment Results	LDEQ Assessment Results	Third-Party Data Reconciliation with LDEQ 2022 IR Assessments
LA041301_00	PC	DO Enterococci Fecal coliform pH Temperature Turbidity	FS NS FS FS FS FS	FS FS FS FS FS FS	PC dataset indicating failure to support Enterococci criterion is sufficient to override LDEQ assessment; <b>Report as impaired for Enterococci</b>
LA041401_00	PC	DO Temperature	NS FS	NS FS	All assessments agree – <b>No change</b>
LA041901_00	PC	DO Temperature	NS FS	NS FS	All assessments agree – <b>No change</b>
LA042001_00	PC	DO Temperature	NS FS	FS FS	PC dataset indicating failure to support DO criterion is sufficient to override LDEQ assessment; <b>Report as impaired for DO</b>
LA042201_00	PC	DO Temperature	NS FS	NS FS	All assessments agree – <b>No change</b>
LA042202_00	PC	DO Temperature	NS FS	FS FS	PC dataset indicating failure to support DO criterion is sufficient to override LDEQ assessment; <b>Report as impaired for DO</b>
LA042203_00	PC	DO Temperature	FS FS	FS FS	All assessments agree – <b>No change</b>
LA042204_00	PC	DO Temperature	FS FS	NS FS	PC dataset indicating Full Support of DO criterion is not sufficient to override LDEQ assessment – <b>No change</b>
LA042206_00	PC	DO Temperature	NS FS	FS FS	PC dataset indicating failure to support DO criterion is sufficient to override LDEQ assessment; <b>Report as impaired for DO</b>

Table 6.

**Third-party parameter-specific data assessments and Louisiana Department of Environmental Quality 2022 *Integrated Report* conventional data assessments (FS = Fully Supported; NS = Not Supported).**

Subsegment Number	Collecting Organization	Parameter	Third-Party Assessment Results	LDEQ Assessment Results	Third-Party Data Reconciliation with LDEQ 2022 IR Assessments
LA042207_00	PC	DO Temperature	NS FS	FS FS	PC dataset indicating failure to support DO criterion is sufficient to override LDEQ assessment; <b>Report as impaired for DO</b>
LA042209_00	PC	DO Temperature	NS FS	FS FS	PC dataset indicating failure to support DO criterion is sufficient to override LDEQ assessment; <b>Report as impaired for DO</b>
LA050901_00	NOAA	DO pH Temperature	NS FS FS	FS FS FS	NOAA dataset indicating failure to support DO criterion is sufficient to override LDEQ assessment; <b>Report as impaired for DO</b>
LA060801_00	USGS	DO Temperature	NS FS	NS FS	All assessments agree – <b>No change</b>
LA070301_00	USGS	DO pH Temperature	FS FS FS	FS FS FS	All assessments agree – <b>No change</b>
LA070601_00	NOAA	DO pH Temperature	NS FS FS	FS FS FS	NOAA and SEAMAP datasets indicating failure to support DO criterion are sufficient to override LDEQ assessment; <b>Report as impaired for DO</b>
	SEAMAP	DO Temperature	NS FS	FS FS	
LA120806_00	NOAA	DO pH Temperature	NS FS FS	FS FS FS	NOAA dataset indicating failure to support DO criterion is sufficient to override LDEQ assessment; <b>Report as impaired for DO</b>

## **Rationale for Not Using Readily Available Data and Information**

LDEQ conducted evaluations of datasets to determine usability in accordance with standard operating procedures for the IR (LDEQ 2021a) and data quality objectives outlined in the QAPP for the AWQMN (LDEQ 2019) approved by USEPA-Region 6. Data quality issues that may have necessitated qualifications to datasets resulting in limited and/or no usability include, but are not limited to: limited geospatial data and/or representativeness; limited temporal data and/or representativeness; limited quality control data; and quality control data indicating data that are of limited use (e.g., blank contamination, incorrect laboratory procedures).

## **Good Cause for Not Listing Waters**

In accordance with CWA §303(d) and federal regulations, LDEQ listed waters as impaired and requiring TMDL development (IRC 5, IRC 5RC, and IRC 5-Alt; see [Table 1](#)) if sufficient data of appropriate quality were available. Conversely, if insufficient or incomplete datasets were available through LDEQs ambient water quality monitoring or other sources, then the water body was reported as unassessed or prior IR assessments were carried forward.

## **Use of Flow Rating for Assessments**

As part of its ambient water quality monitoring program LDEQ includes a qualitative flow rating, which is recorded at the time water quality samples and meter readings are collected. LDEQ's flow ratings are found in [Table 7](#). For the 2022 IR flow ratings of “no flow” were identified and evaluated to determine if the “no flow” rating may have impacted the water quality samples used for the report. “No flow” was reported for 164 samples at 68 sites. After reviewing the sites in question it was determined that no flow conditions are a common occurrence for all of the streams. A flow rating of “Dry” was reported for 24 samples at 9 sites. In some cases the sample size for these sites was unavoidably reduced. However, in most cases assessments could still be conducted for the subsegments.

“Flood” was reported for 127 data points on 67 sites. This was likely due to the extreme rain events that occurred during the period of record for the 2022 IR. Identification of these “Flood” sample events led to further investigation of Ouachita River, subsegment LA080101\_00. During the investigation it was found that all of the low DO occurrences coincided with high water at the USGS gage station on the Ouachita River at Felsenthal. Footnote 15 of LAC 33:IX.1123, Table 3, which refers to subsegment LA080101\_00 states:

These seasonal criteria may be unattainable during or following naturally occurring high flow (when the gage at Felsenthal Dam exceeds 65 feet and also for the two weeks following the recession of flood waters below 65 feet), which may occur from May through August. *Naturally occurring conditions that fail to meet criteria should not be interpreted as violations of the criteria* (emphasis added).

Therefore, DO results collected when the gage at Felsenthal was > 65 feet were considered rejected for assessment purposes. When these values were removed subsegment LA080101\_00 was determined to be fully supporting the DO criterion.

**Table 7.**

**Flow severity ratings for suitable streams in Louisiana's ambient water quality monitoring network.**

<b>LDEQ Flow Code</b>	<b>LDEQ Flow Description</b>
0 = Not Applicable	Used for lakes, estuaries, bays with no normal flow or only tidal flows.
1 = Dry	Streambed is completely dry with no visible pools.
2 = Intermittent	Streambed has water visible in naturally occurring isolated pools.
3 = No Flow	Streambed has water from bank to bank but flow is not detectable.
4 = Low Flow	Flows are detectable.
5 = Normal Flow	Flows greater than low flow but stay within the stream channel.
6 = High Flow	Flows that leave the normal stream channel but stay within the stream banks.
7 = Flood	Flows that leave the normal confines of the stream channel and move out on to the flood plain over the stream bank (either side of the stream).

### **Suspected Sources of Impairment**

In addition to the use of water quality data in making assessments, LDEQ, Office of Environmental Compliance, Surveillance Division staff familiar with local watershed conditions and activities provide input regarding significant suspected sources of impairment. Surveillance Division staff also provide input in cases where natural sources were potentially causing criteria exceedances. In such cases, LDEQ will evaluate the need for a Use Attainability Analysis or other water quality survey for potential criteria revision. Suspected sources for all water body impairment combinations are not required at this stage of IR development but will be provided in the final 2022 Integrated Report.

### **Integrated Report Category Determination**

LDEQ made a preliminary determination of IR categorization ([Table 1](#)) based on statistical assessment of criteria exceedances and subsequent determination of a water body's designated use support ([Table 2](#)). LDEQ used additional information such as previous TMDL development (IRC 4a), insufficient data determinations (IRC 3), environmental events (e.g., droughts, severe weather, oil spill) (IRC 3 or IRC 4b), remediation activities (IRC 4b), and suspected sources of impairment to determine appropriate IR categories. Multiple IR categories may be assigned to a single subsegment which has multiple criteria for multiple uses.

IR Category 3 was used for selected subsegments with potential nutrient enrichment concerns but which did not already have a TMDL developed. Listings for nitrate/nitrite nitrogen and total phosphorus were historically based on evaluative assessments. However, the evaluative assessments were based on best professional judgment with no numeric nutrient criteria basis. LDEQ is currently coordinating with USEPA to collect data that will inform the nutrient criteria development process and allow more appropriate assessments in the future.

## Total Maximum Daily Load Prioritization

The CWA Section 303(d) Program provides a mechanism for integration of implementation efforts to restore and protect the nation's aquatic resources. Through this process the nation's waters are assessed, restoration and protection objectives are systematically prioritized, and TMDLs and alternative approaches are adaptively implemented to achieve water quality goals with collaboration of state and federal agencies, tribes, the regulated community, and the public. A New Vision has been described whereby states may identify and prioritize water bodies for these restoration and protection efforts under the §303(d) Vision Program (USEPA 2013). The primary goals/elements of this vision include prioritization, assessment, protection, TMDL alternatives, engagement, and integration.

This vision requires that states establish a prioritization framework by which the states will establish a list of priority watersheds to be addressed during the period FY2016-FY2022. As a part of the first round of the New Vision, LDEQ developed such a framework and solicited public feedback. Comments received were considered during the development of the final list of priority watersheds. The prioritization framework was made available to the public via LDEQ's website at: <http://deq.louisiana.gov/page/clean-water-act>. Electronic notices were sent out via Louisiana's electronic notification system.

In addition to conducting a public review of the prioritization framework, LDEQ delivered presentations at various conferences and workshops to inform stakeholders and the public. LDEQ also met with various state agencies, local governments, and watershed-based organizations. LDEQ commits to continuing engagement with stakeholders and the general public as it undertakes the next round of the New Vision. The list of priority watersheds for the next round of the New Vision are shown below in [Table 8](#).

**Table 8.**

### **Draft list of TMDL candidate watersheds for the period FY2023 – FY2032.**

<b>Subsegment</b>	<b>Water Body Name</b>	<b>Projected Plan Type</b>
LA050304_00	Bayou Blue	New TMDL (fecal coliform)
LA050201_00	Bayou Plaquemine Brule	TMDL Revision (dissolved oxygen)
LA030802_00	Hickory Branch	New TMDL (dissolved oxygen)
LA020101_00	Bayou Verret, Bayou Chevreuil, Bayou Citamon, and Grand Bayou	TMDL Revision (dissolved oxygen)
LA040701_00 LA040702_00 LA040703_00 LA040704_00 LA040705_00	Tangipahoa River, Big Creek, Chappepeela Creek, and Bedico Creek	TMDL Alternative
LA020101_00	Bayou Verret, Bayou Chevreuil, Bayou Citamon, and Grand Bayou	New TMDL (fecal coliform)



**Table 8.**

**Draft list of TMDL candidate watersheds for the period FY2023 – FY2032.**

<b>Subsegment</b>	<b>Water Body Name</b>	<b>Projected Plan Type</b>
LA030505_00	Contraband Bayou	TMDL Revision (dissolved oxygen)
LA040102_00	Comite River	TMDL Alternative

LDEQ expects that alternative plans are the most appropriate means to achieve the water quality standards in many watersheds since the impairment issues are likely caused by conditions outside the regulatory impacts of traditional TMDLs. Such conditions may include nonpoint source loads (including individual treatment units in unsewered areas), unpermitted dischargers, or permitted dischargers that are not meeting the limits provided in the current permit limits.

LDEQ anticipates that, in general, the alternative plans may include the tasks listed below. The actual plans may vary on a case-by-case basis based on the conditions and characteristics of the individual water body.

**General Alternative Plan Structure:**

1. Investigative activities
  - a. Water body monitoring
  - b. Discharger inventory review
  - c. Loading estimations (as needed based on the appropriate available data)
  - d. Facility inspections
  - e. Individual unit inspections
  - f. Work with local stakeholders, governments, & organizations
    - i. Education and outreach
  - g. Pre-plan monitoring
2. Plan development
3. Implementation
  - a. Assist local stakeholders, governments, & organizations
    - i. Education and outreach
    - ii. Development of ordinances as needed
    - iii. Regionalization
  - b. Implementation of best management practices (BMPs)
  - c. Assist with required upgrades for
    - i. Permitted
    - ii. Unpermitted facilities (acquire permits)
    - iii. Individual homes
  - d. Compliance schedules/orders, penalties (as needed)
  - e. Monitoring during implementation
4. Post-plan implementation monitoring.

LDEQ has identified several potential partners to assist in activities conducted in the priority watersheds, including but not limited to:

- United States Environmental Protection Agency (USEPA);

- United States Geological Survey (USGS);
- United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS);
- Louisiana Department of Health (LDH);
- Louisiana Department of Agriculture and Forestry (LDAF);
- Louisiana Department of Wildlife and Fisheries (LDWF);
- Louisiana Department of Natural Resources (LDNR);
- Coastal Protection and Restoration Authority (CPRA);
- Pontchartrain Conservancy (PC), formerly known as Lake Pontchartrain Basin Foundation (LPBF);
- universities;
- local governments;
- local watershed-based organizations; and
- local watershed coordinators currently under LDEQ contract.

Funding for TMDLs and alternatives is expected to be provided by various sources. The primary sources are expected to be performance partnership grants, §106 grants (pollution control), §319 grants (nonpoint source management), and the State Revolving Loan Fund. Additional funding or other assistance may be provided by partnering agencies and organizations. Monitoring will be conducted to evaluate the progress of each individual plan. Ambient monitoring may serve as the primary source of monitoring, with additional monitoring conducted as needed. Plans will be adaptively managed to allow for necessary updates or changes in conditions. Plans will also be reviewed periodically to determine if the activities are being effective or if changes are needed and ensure that activities are being conducted appropriately.

All water body impairment combinations in IRCs 5 or IRC 5RC and not previously identified under the §303(d) Vision protocols were prioritized as follows:

1. WICs listed in IRC 5 with drinking water source or oyster propagation designated uses with suspected impairments due to fecal coliforms or organic compounds were given medium priority.
2. WICs listed in IRC 5 with suspected impairments due to fecal coliforms or organic compounds in subsegments *without* drinking water source or oyster propagation designated uses were assigned low priority for TMDL development.
3. WICs listed in IRC 5RC were assigned low priority for TMDL development to allow LDEQ time to evaluate the need for updated criteria.
4. WICs listed in IRC 5 for enterococci bacteria impairments based on LDH beach monitoring data or LDEQ ambient water quality monitoring data were assigned low priority to allow LDEQ time to coordinate with USEPA on source and epidemiological studies.
5. WICs listed in IRC 5 for the following suspected impairments were assigned low priority due to the non-critical nature of the impairments or due to uncertainty regarding the validity of the suspected impairment (e.g., natural conditions, lack of apparent anthropogenic sources, sources outside the scope of TMDL development):
  - Low or high pH
  - Metals

- Chlorides, sulfates, total dissolved solids
  - Temperature
  - Turbidity
  - Mercury in fish tissue (primary source is regional/global atmospheric deposition)
6. All other WICs not previously mentioned were assigned low priority.

## Summary

The 2022 IR §303(d) list represents a compilation of primarily four different sources of information: 1) the 2020 IR; 2) new data assessments for all 12 Louisiana basins with monitoring data (internal and third-party) between October 2016 and September 2020; 3) all recent TMDL activities occurring during or after development of the 2020 §303(d) list; and 4) current fish consumption and swimming advisories in Louisiana. It is important to note that removal of a water body from the §303(d) list, for any reason, does not remove water quality protections from that water body. All water bodies in Louisiana, §303(d) listed or not, are subject to the same protections under federal and state laws and regulations, in particular the CWA and Louisiana's surface water quality standards (LAC 33:IX.Chapter 11). LDEQ will continue to monitor and assess the quality of Louisiana's waters; permitted facilities are subject to conditions of their permits; unpermitted point source dischargers are required to obtain a permit or face enforcement actions; violators of permit conditions are subject to enforcement action; and contributors to nonpoint sources of pollution are encouraged to follow BMPs as developed by LDEQ's NPS Program and its many collaborators.

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